

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

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4-6005

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

**05.04.2005**

Applicant's or agent's file reference

**R04321PCT**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/JP2005/003443**

International filing date (day/month/year)

**23.02.2005**

Priority date (day/month/year)

**02.03.2004**

International Patent Classification (IPC) or both national classification and IPC

Int.Cl. **B41J 2/045, 2/055**

Applicant

**RICOH COMPANY, LTD.**

1. This opinion contains indications relating to the following items:



Box No. I

Basis of the opinion



Box No. II

Priority



Box No. III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



Box No. IV

Lack of unity of invention



Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement



Box No. VI

Certain documents cited



Box No. VII

Certain defects in the international application



Box No. VIII

Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Date of completion of this opinion

**16.03.2005**

Name and mailing address of the ISA/JP

**Japan Patent Office**

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

Authorized officer

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**2P**

**9606**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/003443

Box No. I      Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/ 003443

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	5 - 10	YES
	Claims	1 - 4, 11, 12	NO
Inventive step (IS)	Claims		YES
	Claims	1 - 12	NO
Industrial applicability (IA)	Claims	1 - 12	YES
	Claims		NO

2. Citations and explanations

D1: JP 2003-309302 A(CANON KABUSHIKI KAISHA)31.10.2003,  
column5 line31-column6 line7

D2: JP 2001-151566 A(NIHON TOKUSHU TOGYO KABUSHIKI KAISHA)05.06.2001,  
column2 line5-10

D3: JP 2002-265262 A(TDK KABUSHIKI KAISHA)18.09.2002,column4 line33-41

D4: JP 10-297969 A(KABUSHIKI KAISHA MURATA SEISAKUSHO)10.11.1998,  
column1 line27-39

D5: JP 2000-154054 A(MATSUSHITA DENKI SANGYO KABUSHIKI KAISHA)  
06.06.2000,column1 line33-42

Claims 1-4,11,12

D1 discloses a liquid drop discharge head using piezoelectric elements made of barium titanate or potassium niobate.

Claim 5

D2 discloses a piezoelectric element made of bismuth sodium titanate. Person skilled in the art can conceive easily to use it as the actuators of a liquid discharge head disclosed in D1.

Claim 6

D3 discloses a piezoelectric element made of nickel sodium titanate. Person skilled in the art can conceive easily to use it as the actuators of a liquid discharge head disclosed in D1.

Claims 7,8

D4 discloses a piezoelectric element made of Ba<sub>2</sub>NaNb<sub>5</sub>O<sub>15</sub>. Person skilled in the art can conceive easily to use it as the actuators of a liquid discharge head disclosed in D1.

Claims 9,10

D5 discloses a piezoelectric element made of Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub>. Person skilled in the art can conceive easily to use it as the actuators of a liquid discharge head disclosed in D1.